

All other figures and explanation of the figures

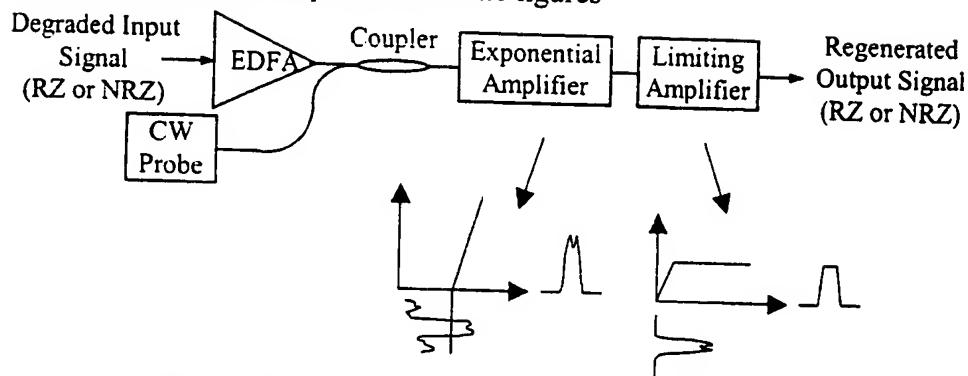


Fig. 1. Schematic diagram for format insensitive 2R regeneration

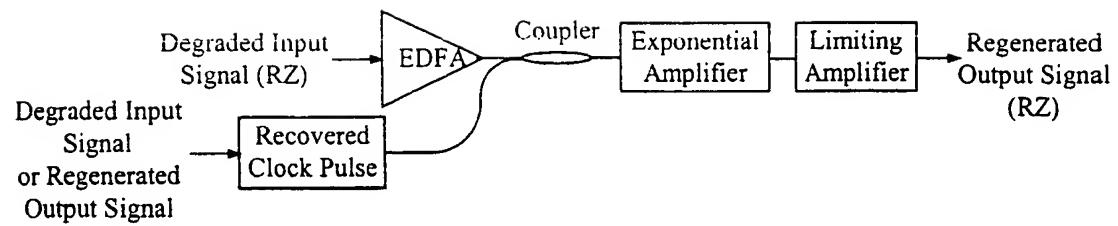


Fig. 2. Schematic diagram for 3R regeneration

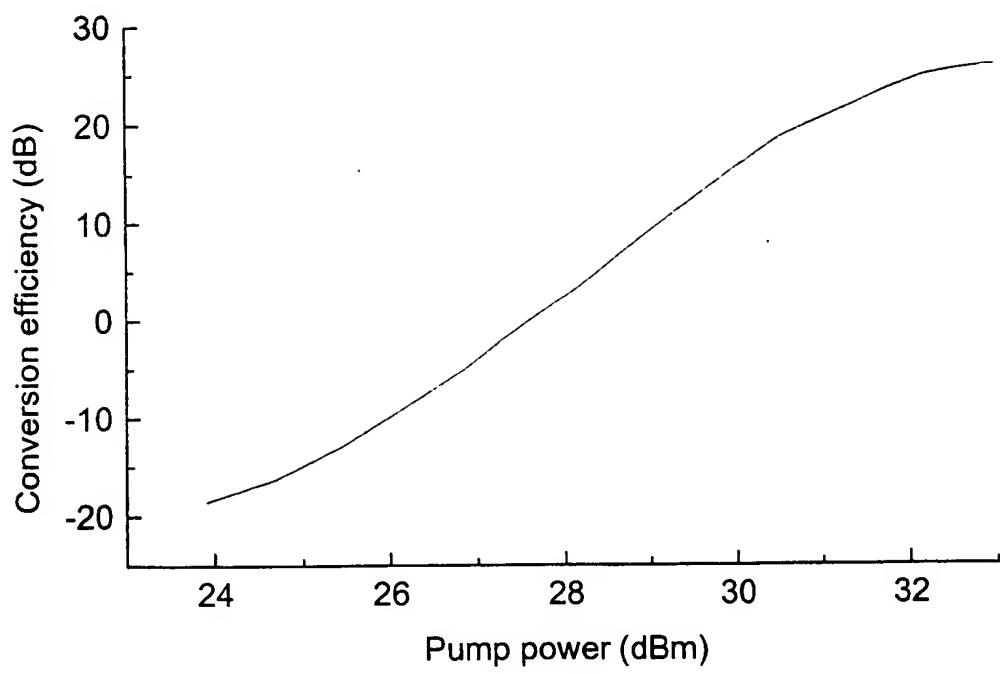


Fig. 3. The parametric conversion efficiency as a function of the peak pump power shows the exponential relationship with moderate pump condition.

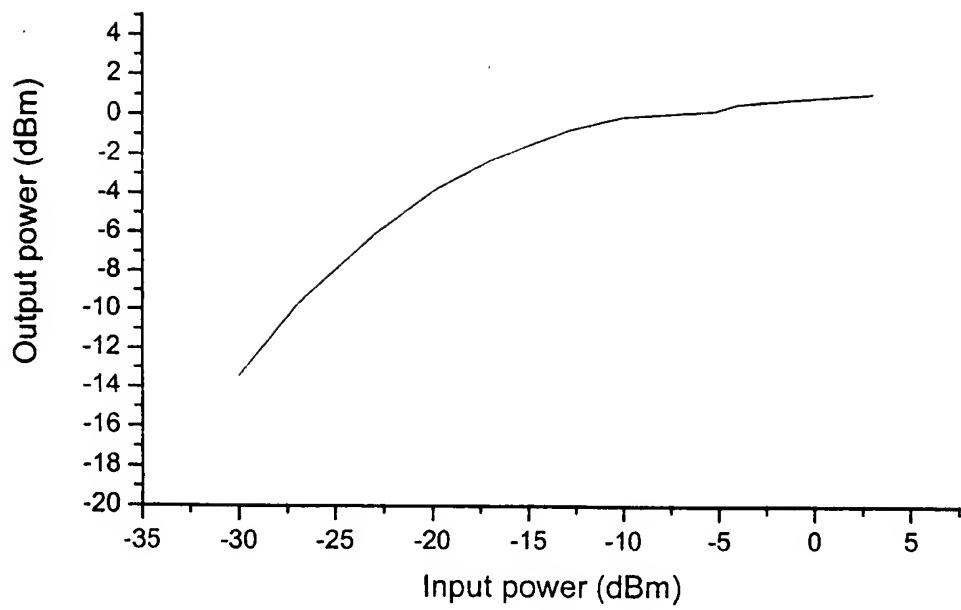


Fig. 4. The output vs. input power relationship of SOA at saturation state

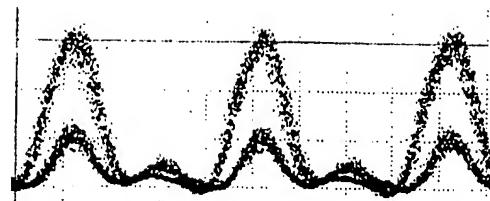


Fig. 5 (a)

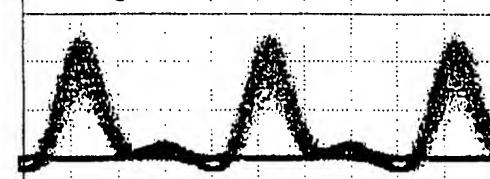


Fig. 5 (b)

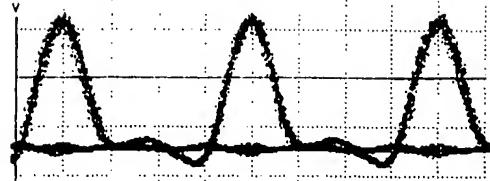


Fig. 5 (c)

Fig. 5. Eye diagrams at 5 Gb/s for (a) Extinction ratio seriously degraded signal, (b) idler signal after parametric amplification by a DSF, (c) final regenerated signal. The horizontal scale is 50 ps/div and the vertical scale is 200 mV/div. The extinction ratios are 4.5 dB, 18 dB, 15.4 dB respectively.

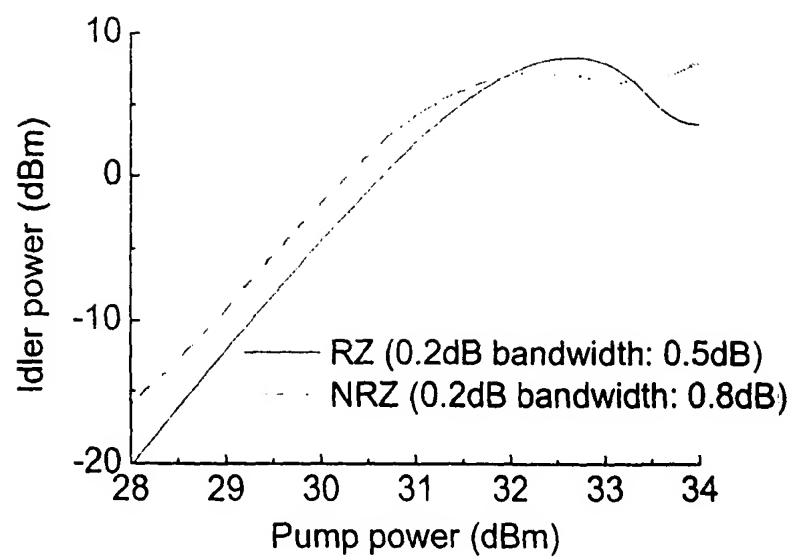


Fig. 6. Simultaneous exponential amplification and limiting amplification with a piece of fiber

Fig. 7a

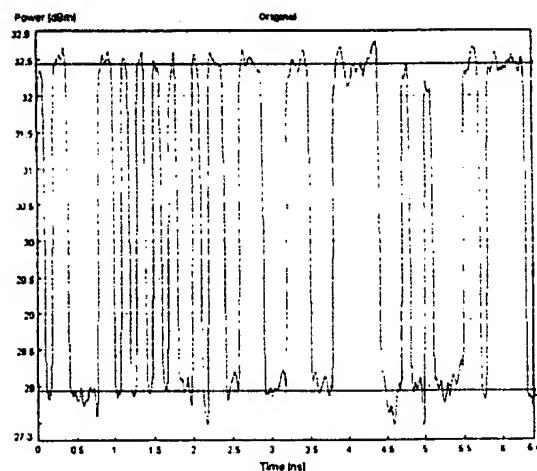
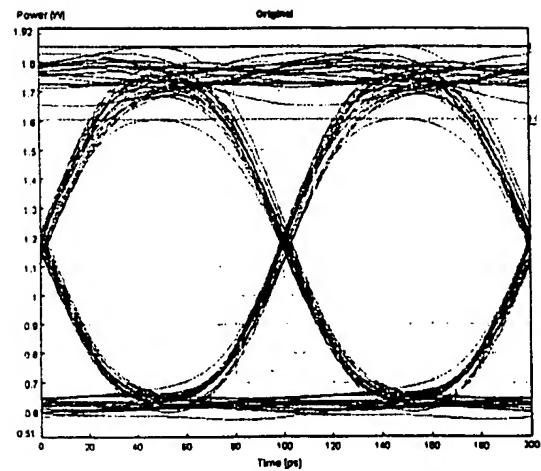
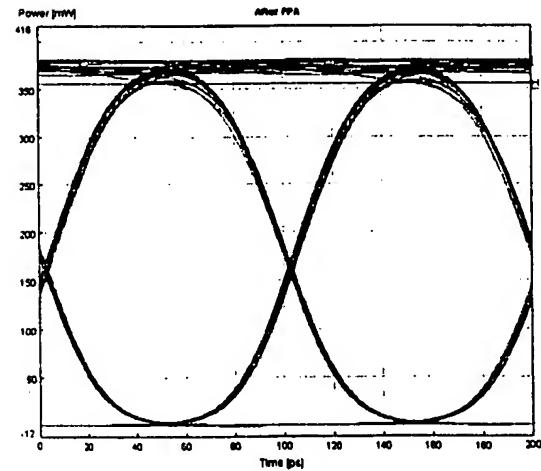
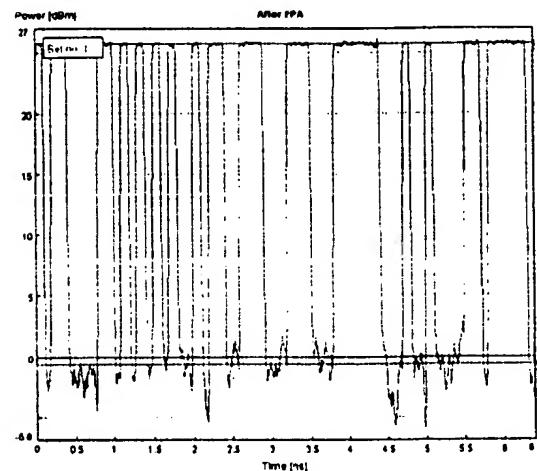


Fig. 7b



Original: 4.5 dB ER, 14% fluctuation at bit 1's



Regenerated: 26 dB ER, 6% fluctuation at bit 1's

Fig. 7c

Fig. 7d

Fig. 8a

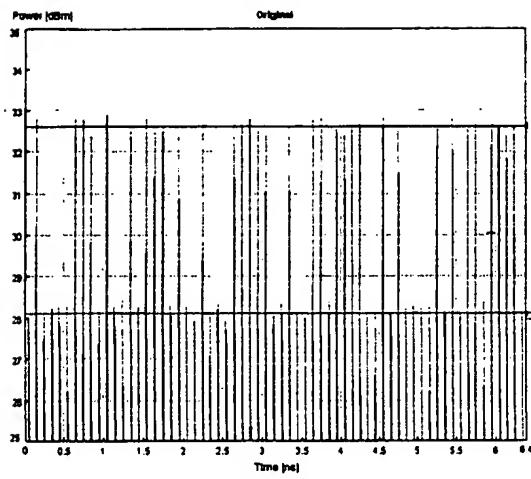
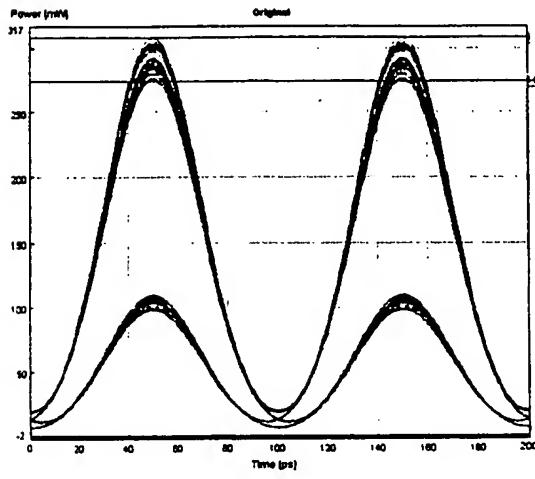


Fig. 8b



Original: 4.5 dB ER, 11% fluctuation at bit 1's

Fig. 8c

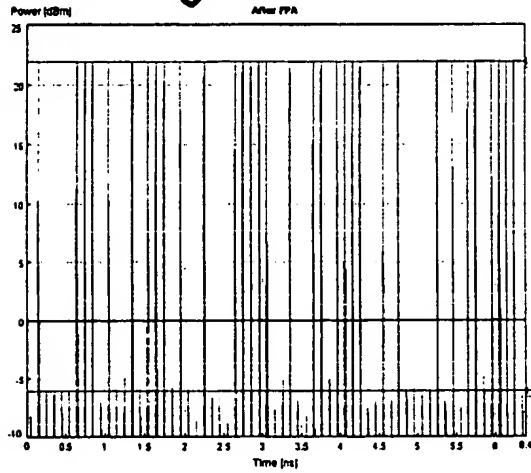
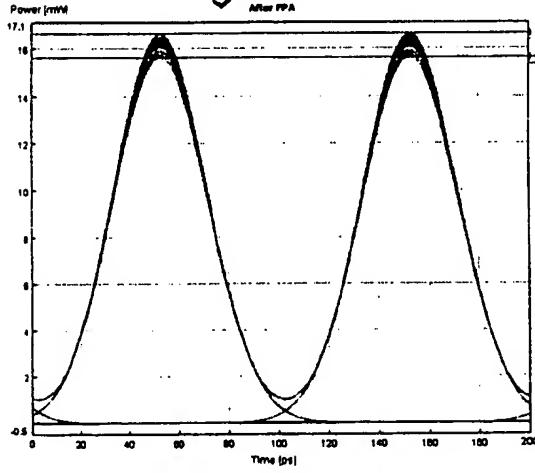


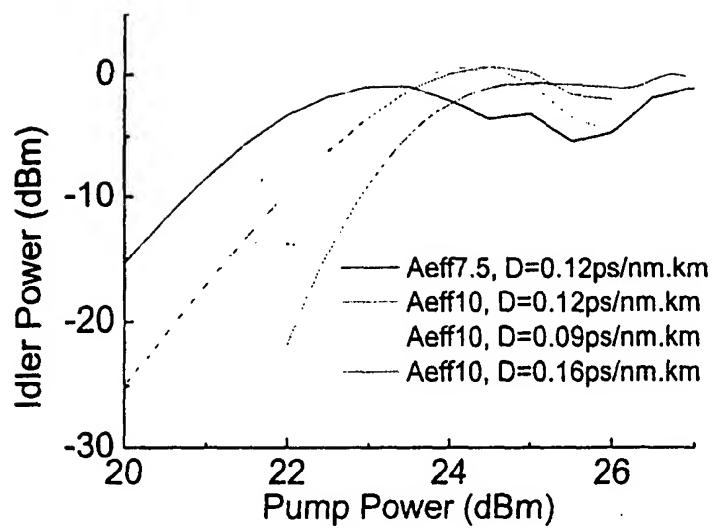
Fig. 8d



Regenerated: 28 dB ER, 6% fluctuation at bit 1's

Fig. 8. 2R regeneration for 10 Gb/s RZ data

Fig. 9



Top fluctuation 24.1% \rightarrow 5.5% @ A_{eff}10, D=0.16 ps/nm.km
Fig. 9. Sensitivity improved by using photonic crystal fiber.

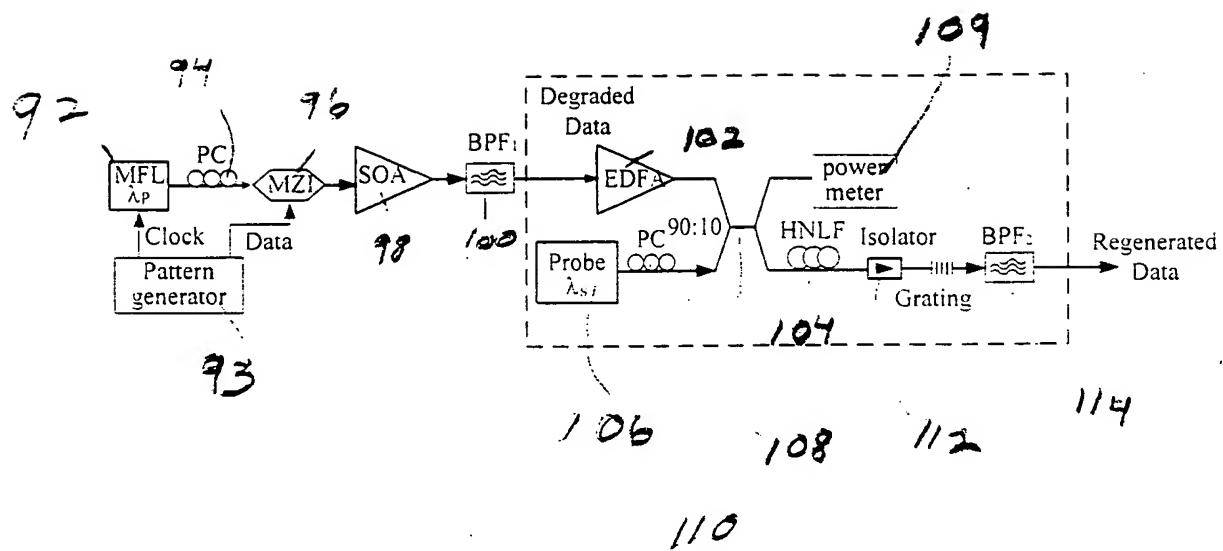


Fig. 10

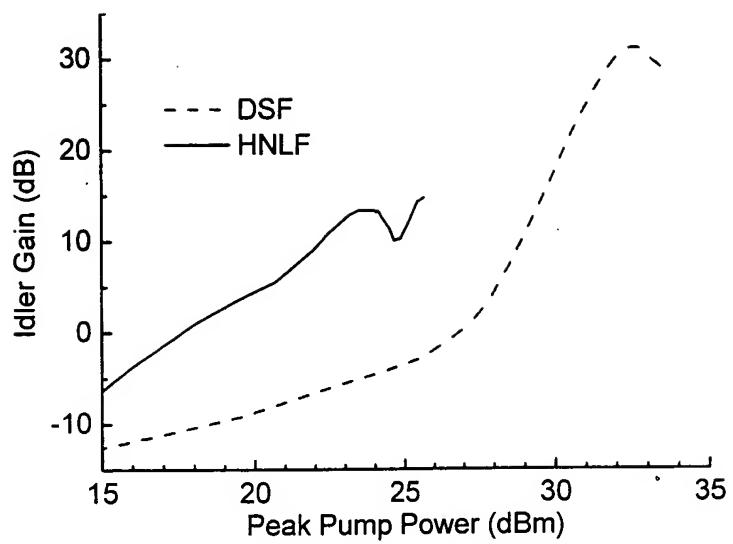


Fig. 11

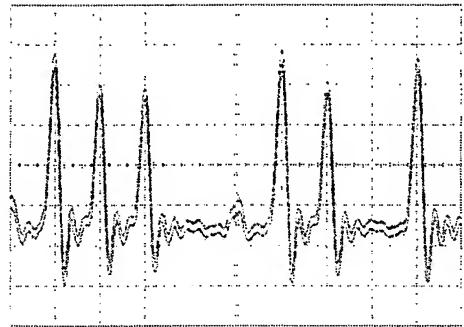


Fig. 12 (a)

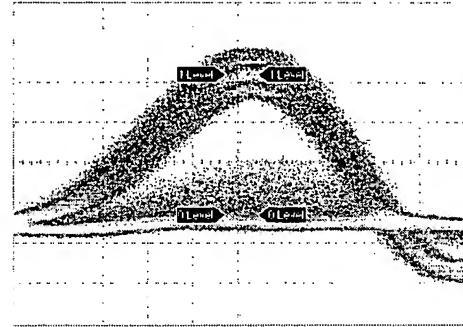


Fig. 12 (b)

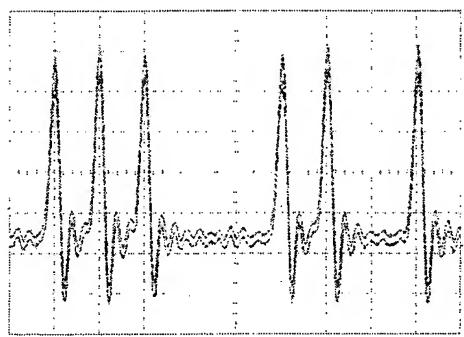


Fig. 12 (c)

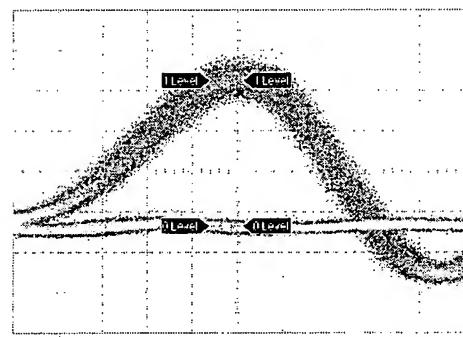


Fig. 12 (d)

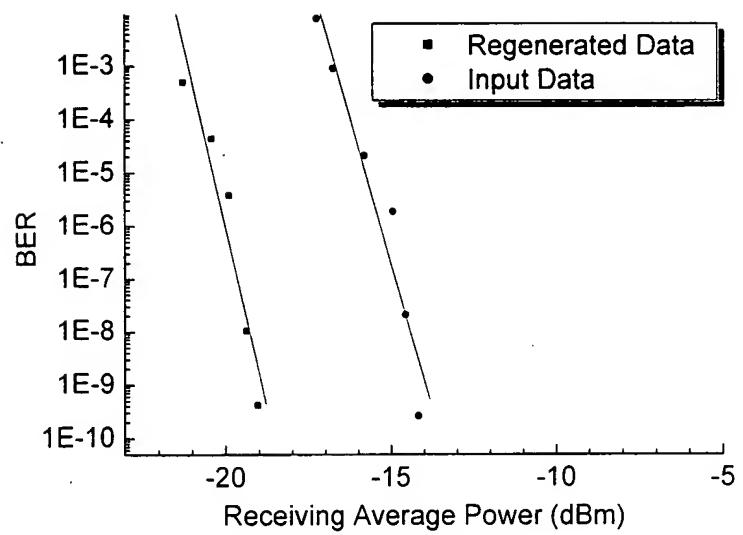


Fig. 13